

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A vacuum pump comprising:
a pair of screw rotors each having a substantially hollow-cylindrical shape with one ~~[[end]] site closed, each having a plurality of helical land portions and a plurality of helical groove portions, and adapted to rotate~~ rotating about substantially parallel two axes ~~while meshing with each other, respectively;~~
a casing ~~receiving therein said pair of screw rotors;~~
a pair of shafts ~~provided so as to extend from~~ attached to inside surfaces of the closed ~~ends on the cylinder inside portions~~ of said pair of screw rotors so as to extend along said axes, respectively, and supporting said pair of screw rotors, respectively; and
a pair of bearing members each having a substantially hollow-cylindrical shape and disposed between inner circumferential surfaces of rotor cylinders of said pair of screw rotors and outer circumferential surfaces of said pair of shafts, respectively, said pair of bearing members having bearings at inner circumferential surfaces thereof, respectively; ~~characterized in that,~~ said bearing members supporting said screw rotors with permitting rotations of said screw rotors about said axes, respectively; and
a shaft seal structure ~~is provided around an~~ structured between the outer circumferential ~~surface~~ surfaces of said bearing ~~member~~ members ~~located on the cylinder inside of each and the inner circumferential surfaces~~ of said screw rotors;
wherein said shaft seal structure forming a static pressure seal, and comprises a substantially hollow-cylindrical shaft seal members circumferentially attached to said other circumferential surfaces of said bearing members, each of said shaft seal members being porous; and
wherein a seal gas [[being]] is introduced to gaps between said outer circumferential surfaces of said bearing member members and inner circumferential surfaces of said rotor cylinders of said screw rotors through said bearing members from overall of outer circumferential surfaces of said shaft seal member, respectively;

thereby said shaft seal structure forms a static pressure seal so that said screw rotors are centered with respect to said axes without runout and a contact of said inner circumferential surfaces thereof with said shaft seal members, respectively.

2 - 4. (Cancelled).

5. (Currently Amended) A vacuum pump according to claim ~~[[4]]~~ 1, wherein ~~each of said porous member~~ shaft seal members has a porosity of 1% to 20%, and a gas introduction pressure to said ~~porous member~~ shaft seal members is 2MPa to 100MPa.

6 - 7. (Cancelled).

8. (Currently Amended) A vacuum pump according to claim ~~[[3]]~~ 1, wherein said shaft seal ~~member comprises~~ members comprise a plurality of substantially hollow-cylindrical shaft seal member pieces that are juxtaposed ~~in said concave portion~~ while partly overlapping each other ~~in the cylinder axis direction of said bearing member and urging means is disposed between said shaft seal member pieces for urging said shaft seal member pieces in said cylinder axis direction in said concave portion~~ with one another along said axes, respectively.

9. (Currently Amended) A vacuum pump according to claim ~~[[3]]~~ 1, wherein ~~said shaft seal member is formed by a single substantially hollow cylindrical component and an O-ring is disposed at an end surface of each of said shaft seal members member for urging said shaft seal member in said cylinder axis direction in said concave portion.~~

10. (Currently Amended) A vacuum pump according to claim ~~[[3]]~~ 1, wherein said shaft seal ~~member is~~ members are integrally formed with said bearing ~~member~~ members, respectively.

11. (Currently Amended) A vacuum pump according to claim 1 ~~[[or 2]]~~ wherein ~~[[a gap]]~~ said gaps between said outer circumferential ~~[[surface]]~~ surfaces of said bearing ~~member~~ members and said inner circumferential ~~[[surface]]~~ surfaces of said ~~rotor cylinder~~ of said screw ~~rotor is~~ rotors are formed in a tapered shape so as to expand as approaching an exhaust side of an exhaust gas of said vacuum pump, respectively.

12. (Currently Amended) A vacuum pump according to claim 1 ~~[[or 2]]~~, wherein the seal gas is set to such flow velocity that prevents occurrence of back diffusion of the exhaust gas from ~~the exhaust side~~ an exhaust side of said vacuum pump and further prevents oil from flowing into the pump side from ~~[[the]]~~ a bearing side.